

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-86 are pending, of which claims 18-26, 39-41, 56, and 81-85 have been amended. The amendments to claims 18-26, 39-41, 56, and 81-85 are purely of form to provide clarification and/or to correct informalities noted by the Applicant, and are not to overcome prior art or any other objections.

35 U.S.C. §102 Claim Rejections

Claims 1-14, 18-24, 27-36, 39-40, 42-67, and 72-80 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,138,124 to Beckhardt (hereinafter, "Beckhardt") (*Office Action* p.2, ¶2). Applicant respectfully traverses the rejection.

Claims 81-86 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,295,541 to Bodnar et al. (hereinafter, "Bodnar") (*Office Action* p.23, ¶3). Applicant respectfully traverses the rejection.

Beckhardt describes a distributed system in which a database includes documents that each contain a number of fields of information, such as text or numbers (col.1, lines 17-25; col.2, lines 1-7; col.3, lines 39-40). When a field in a document is updated, a field sequence number is updated to indicate that the field has been updated (col.2, lines 10-15; col.3, line 65 – col.4, line 3). When a document that contains the updated field is replicated with another document, the field sequence number for the field is used to determine which of the documents is more recently revised (col.2, lines 15-21). Beckhardt describes replication for

1 only a two level database record (i.e., document: field) and utilizes field sequence
2 numbers to replicate a document (col.6, lines 32-67).

3 Applicant describes a distributed directory service in which a domain
4 controller maintains objects that each contain attributes, where an attribute can
5 include multiple linked values (p.7, lines 20-23). Contrary to the two-level
6 replication described in Beckhardt, Applicant describes at least three-levels (i.e.,
7 object: attribute: linked value) and utilizes conflict resolution data to indicate a
8 change to an object at an attribute linked-value level (p.7, lines 22-23). Further,
9 Applicant describes replication solution(s) that avoid replication conflicts when
10 two objects that are to be replicated each have an updated multi-valued attribute
11 (p.12, line 7 – p.13, line 14.)

12
13 Claim 1 recites a network system comprising “a first computer configured
14 to maintain an object having an attribute, the attribute comprised of individual
15 values, the individual values having conflict-resolution data”. Beckhardt does not
16 show or disclose a distributed system that includes an object having an attribute
17 which is comprised of individual values, as recited in claim 1. Beckhardt
18 describes replication for only a two level database record (i.e., document: field),
19 rather than the at least three-levels (i.e., object: attribute: value) described in claim
20 1. The Office cites Beckhardt at col.2, lines 1-21 stating that Beckhardt teaches
21 the network system recited in claim 1 (*Office Action* p.3). Applicant respectfully
22 disagrees because Beckhardt does not show or disclose an attribute value, or that
23 an attribute value includes conflict-resolution data.
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1 Claim 1 also recites "the second computer further configured to replicate
2 the object from the first computer and resolve a replication conflict between a
3 value of the attribute in the object and the value of the attribute in the replica
4 object, the replication conflict being resolved with the conflict-resolution data."
5 Beckhardt also does not show or disclose a replication conflict resolved between
6 attribute values in an object and a replica object with the attribute value conflict-
7 resolution data.

8 Accordingly, claim 1 is allowable over Beckhardt and Applicant
9 respectfully requests that the §102 rejection be withdrawn.

10
11 Claims 2-14 are allowable by virtue of their dependency upon claim 1.
12 Additionally, claims 2-14 are allowable over Beckhardt for other reasons. For
13 example:

14 Claim 6 recites that "the conflict-resolution data comprises an update
15 timestamp that corresponds to when an individual value is updated". Beckhardt
16 does not show an update timestamp that corresponds to an individual value, as
17 recited in claim 6, or any indication that corresponds to *when* an individual value
18 is updated. The Office contends that Beckhardt shows an update timestamp at
19 col.6, lines 40-45 (*Office Action* p.4). Applicant disagrees because Beckhardt
20 shows only a creation date and a revision date for an overall document, and field
21 sequence numbers for the fields of the document. Beckhardt makes no mention of
22 an update timestamp in the example shown in col.6 and does not disclose any such
23 update timestamp that corresponds to an individual value or an indication of *when*
24 a value is updated. Further Beckhardt describes that replication of a document is
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1 based only on a document sequence number and field sequence numbers – there is
2 no disclosure of timestamp-based replication.

3 Accordingly, claim 6 is allowable over Beckhardt for these additional
4 reasons and Applicant respectfully requests that the §102 rejection be withdrawn.

5 Claim 7 recites that “the conflict-resolution data comprises a creation
6 indicator that corresponds to when an individual value is created”. Beckhardt does
7 not show or disclose a creation indicator that corresponds to an individual value,
8 as recited in claim 7, or any such indication that corresponds to *when* an individual
9 value is updated. The Office contends that Beckhardt also shows a creation
10 indicator at col.6, lines 40-45 (*Office Action* p.4). As described above in the
11 response to the rejection of claim 6, Applicant disagrees because Beckhardt shows
12 only a creation date and a revision date for an overall document, and field
13 sequence numbers for the fields of the document. Beckhardt makes no mention of
14 a creation indicator in the example shown in col.6 and does not disclose any such
15 creation indicator that corresponds to an individual value or an indication of *when*
16 a value is updated.

17 Accordingly, claim 7 is allowable over Beckhardt for these additional
18 reasons and Applicant respectfully requests that the §102 rejection be withdrawn.

19 Claims 8 and 13-14 recite “a creation timestamp that corresponds to when
20 an individual value is created”;

21 Claim 9 recites “an update indicator that corresponds to when the
22 individual value is updated”;

23 Claims 10-11 and 13-14 recite “an update timestamp that corresponds to
24 when the individual value is updated”; and
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1 Claim 12 recites "a creation indicator that corresponds to when an
2 individual value is created, ..., and an update indicator that corresponds to when
3 the individual value is updated".

4 As described above in the response to the rejection of claims 6 and 7,
5 Beckhardt does not show or disclose any such indicators (e.g., creation timestamp,
6 update indicator, update timestamp, and creation indicator) that correspond to
7 *when* an individual value (of an attribute of an object) is created and/or updated.
8 Beckhardt only describes a *document* revision time stamp (col.5, lines 35-42), and
9 the *document* revision and creation dates (col.6, lines 40-41). Beckhardt does not
10 show any such indicators that correspond to an individual value of an attribute of
11 an object. Accordingly, claims 8-14 are allowable over Beckhardt for these
12 additional reasons and Applicant respectfully requests that the §102 rejection be
13 withdrawn.

14
15 Claim 18 recites a state-based replication system, comprising "an object
16 having an attribute comprised of linked values, individual linked values having
17 indicators to indicate a change to a linked value of the attribute" and "a computing
18 device configured to replicate the object and, with the indicators, identify a change
19 to a linked value of the attribute". As described above in the response to the
20 rejection of claim 1, Beckhardt does not show or disclose "an object having an
21 attribute comprised of linked values" or "individual linked values having
22 indicators to indicate a change to a linked value", as recited in claim 18.

23 Beckhardt describes replication for fields of a document rather than linked
24 values of an attribute of an object, as described in claim 18. The Office cites
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1 Beckhardt at col.1, lines 15-25 as teaching an object having an attribute comprised
2 of linked values (*Office Action* p.9). Applicant respectfully disagrees because
3 Beckhardt only describes a document and fields and does not show or disclose
4 linked values of an attribute (i.e., Beckhardt does not show linked values of a field
5 of a document), or that a linked value of an attribute includes indicators to indicate
6 a change to a linked value of an attribute.

7 Accordingly, claim 18 is allowable over Beckhardt and Applicant
8 respectfully requests that the §102 rejection be withdrawn.

9
10 Claims 19-24 are allowable by virtue of their dependency upon claim 18.
11 Additionally, claims 19-24 are allowable over Beckhardt for other reasons. For
12 example:

13 Claim 21 recites "an update indicator that corresponds to when a linked
14 value is changed";

15 Claim 22 recites "a creation indicator that corresponds to when a linked
16 value is created";

17 Claim 23 recites "an update timestamp that corresponds to when the linked
18 value is changed"; and

19 Claim 24 recites "a creation timestamp that corresponds to when a linked
20 value is created, ..., and an update timestamp that corresponds to when the linked
21 value is changed".

22 As described above in the response to the rejection of claims 6 and 7,
23 Beckhardt does not show or disclose any such indicators (e.g., update indicator,
24 creation indicator, update timestamp, and creation timestamp) that correspond to
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1 when a linked value (of an attribute of an object) is created and/or changed.
2 Accordingly, claims 21-24 are allowable over Beckhardt for these additional
3 reasons and Applicant respectfully requests that the §102 rejection be withdrawn.
4

5 Claim 27 recites a state-based replication system comprising "a first
6 computer configured to maintain a first data structure, the first data structure
7 having a multi-valued attribute comprised of linked values, individual linked
8 values having conflict-resolution information to indicate a change to a value of the
9 attribute". Beckhardt does not show or disclose a replication system that includes
10 a data structure having a multi-valued attribute comprised of linked values, as
11 recited in claim 27.

12 As described above in the response to the rejection of claim 1, Beckhardt
13 describes replication for fields of a document rather than linked values of a multi-
14 valued attribute of a data structure, as described in claim 27. The Office cites
15 Beckhardt at col.1, lines 15-25 stating that Beckhardt teaches the state-based
16 replication system recited in claim 27 (*Office Action* p.10). Applicant respectfully
17 disagrees because Beckhardt only describes a database which includes documents
18 that each contain a number of fields of information, such as text or numbers (col.1,
19 lines 17-25). Beckhardt does not show or disclose a multi-valued attribute
20 comprised of linked values, or that a linked value has conflict-resolution
21 information, as recited in claim 27.

22 Claim 27 also recites "a replication conflict between a value of the attribute
23 in the first data structure and a value of the attribute in the second data structure
24 resolved with the conflict-resolution information associated with the values."
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1 Beckhardt also does not show or disclose a replication conflict resolved between
2 values in a first data structure and a second data structure with the conflict-
3 resolution information associated with the values.

4 Accordingly, claim 27 is allowable over Beckhardt and Applicant
5 respectfully requests that the §102 rejection be withdrawn.

6
7 Claims 28-36 are allowable by virtue of their dependency upon claim 27.
8 Additionally, claims 28-36 are allowable over Beckhardt for other reasons. For
9 example:

10 Claims 31 and 35 recite "an update indicator that corresponds to when an
11 individual linked value is changed";

12 Claim 32 recites "an update timestamp that corresponds to when an
13 individual linked value is changed";

14 Claim 33 recites "a creation indicator that corresponds to when an
15 individual linked value is created";

16 Claim 34 recites "a creation timestamp that corresponds to when an
17 individual linked value is created"; and

18 Claim 36 recites "a creation indicator that corresponds to when an
19 individual linked value is created, ..., and an update indicator that corresponds to
20 when the individual linked value is changed."

21 As described above in the response to the rejection of claims 6 and 7,
22 Beckhardt does not show or disclose any such indicators (e.g., update indicator,
23 update timestamp, creation indicator, and creation timestamp) that correspond to
24 *when* an individual linked value (of a multi-valued attribute of a data structure) is
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1 created and/or changed. Accordingly, claims 31-36 are allowable over Beckhardt
2 for these additional reasons and Applicant respectfully requests that the §102
3 rejection be withdrawn.

4
5 Claim 39 recites a computer-readable medium having stored thereon a data
6 structure comprising "a first data field containing an attribute" and a "a second
7 data field containing a linked value of the attribute contained in the first data
8 field". As described above in the response to the rejection of claim 1, Beckhardt
9 does not show or disclose a data structure comprising a first data field containing
10 an attribute and a second data field containing a linked value of the attribute, as
11 recited in claim 39.

12 Claim 39 also recites "a fourth data field containing an update indicator
13 corresponding to when the version indicator contained in the third data field is
14 changed." As described above in the response to the rejection of claims 6 and 7,
15 Beckhardt does not show or disclose an indicator corresponding to *when* a version
16 indicator is changed.

17 Accordingly, claim 39 is allowable over Beckhardt and Applicant
18 respectfully requests that the §102 rejection be withdrawn.
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1 Claim 40 is allowable by virtue of its dependency upon claim 39.
2 Additionally, claim 40 recites "a fifth data field containing a creation indicator
3 corresponding to when the linked value contained in the second data field is
4 created." Beckhardt does not show or disclose an indicator corresponding to when
5 a creation indicator corresponding to a linked value is created. Accordingly, claim
6 40 is allowable over Beckhardt for this additional reason.

7
8 Claim 42 recites a network system comprising "an object having a multi-
9 valued attribute, the multi-valued attribute comprised of individual values", a
10 "second object having a multi-valued attribute comprised of individual values, the
11 individual values configured to have conflict-resolution data", and a computer to
12 "resolve a replication conflict between the object and the second object at the
13 attribute value level with the conflict-resolution data."

14 As described above in the response to the rejection of claim 1, Beckhardt
15 does not show or disclose "an object having a multi-valued attribute comprised of
16 individual values" or "individual values configured to have conflict-resolution
17 data", as recited in claim 42. Further Beckhardt does not show or disclose that a
18 replication conflict is resolved between objects at an attribute value level with
19 conflict-resolution data.

20 Accordingly, claim 42, as well as dependent claims 43-54, are allowable
21 over Beckhardt and Applicant respectfully requests that the §102 rejection be
22 withdrawn.
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1 Claim 55 recites "the object and the replica object having an attribute
2 comprised of individual values, the individual values having conflict-resolution
3 data". As described above in the response to the rejection of claim 1, Beckhardt
4 does not show or disclose an object having an attribute comprised of individual
5 values, or "individual values configured to have conflict-resolution data", as
6 recited in claim 55. Accordingly, claim 55 is allowable over Beckhardt and
7 Applicant respectfully requests that the §102 rejection be withdrawn.

8
9 Claims 56-67 and 72 are allowable by virtue of their dependency upon
10 claim 55 (either directly or indirectly). Additionally, claims 56-72 are allowable
11 over Beckhardt for other reasons. For example:

12 Claims 58-59 and 62-63 recite "an update timestamp that corresponds to
13 when an individual value is changed";

14 Claims 60-61 recite "a creation timestamp that corresponds to when an
15 individual value is created"; and

16 Claims 65-66 recite "a creation timestamp that corresponds to when an
17 individual value is created, ..., and an update timestamp that corresponds to when
18 the individual value is changed".

19 As described above in the response to the rejection of claims 6 and 7,
20 Beckhardt does not show or disclose any such indicators (e.g., update timestamp
21 and creation timestamp) that correspond to *when* an individual value (of an
22 attribute of an object) is created and/or changed. Accordingly, claims 58-63 and
23 claims 65-66 are allowable over Beckhardt for these additional reasons and
24 Applicant respectfully requests that the §102 rejection be withdrawn.
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2 Claim 73 recites a "method for replicating a linked value of a multi-valued
3 attribute contained in an object, the linked value having conflict-resolution
4 information and replicated from a replica object having the multi-valued attribute
5 and the linked value". As described above in the response to the rejection of claim
6 1, Beckhardt does not show or disclose an object having a multi-valued attribute
7 which includes a linked value, or a linked value having conflict-resolution
8 information", as described in claim 73. Accordingly, claim 73 is allowable over
9 Beckhardt and Applicant respectfully requests that the §102 rejection be
10 withdrawn.

11
12 Claims 74-80 are allowable by virtue of their dependency upon claim 73
13 (either directly or indirectly). Additionally, claims 74-80 are allowable over
14 Beckhardt for other reasons. For example:

15 Claim 75 recites "an update timestamp that corresponds to when the linked
16 value is changed";

17 Claim 76 recites "a creation timestamp that corresponds to when the linked
18 value is created"; and

19 Claims 77-78 recite "a creation timestamp that corresponds to when the
20 linked value is created, ..., and an update timestamp that corresponds to when the
21 linked value is changed".

22 As described above in the response to the rejection of claims 6 and 7,
23 Beckhardt does not show or disclose any such indicators (e.g., update timestamp
24 and creation timestamp) that correspond to *when* a linked value (of a multi-valued
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1 attribute of an object) is created and/or changed. Accordingly, claims 75-78 are
2 allowable over Beckhardt for these additional reasons and Applicant respectfully
3 requests that the §102 rejection be withdrawn.

4
5 Claims 81-86 are rejected under 35 U.S.C. §102(e) as being anticipated by
6 U.S. Patent No. 6,295,541 to Bodnar et al. (hereinafter, "Bodnar") (*Office Action*
7 p.23, ¶3). Applicant respectfully traverses the rejection.

8
9 Similarly to Beckhardt, Bodnar describes synchronizing datasets of records
10 where each record may include one or more data fields (col.7, lines 13-25). As in
11 Beckhardt, Bodnar describes synchronization for only a two level dataset (i.e.,
12 record: field).

13
14 Claim 81 recites a method comprising "replicating a first object with a
15 second object, the first object having an attribute comprised of linked values, the
16 second object having an attribute comprised of linked values configured to have
17 associated conflict-resolution data". Bodnar does not show or disclose an object
18 having an attribute comprised of linked values, or a linked value having associated
19 conflict-resolution data, as recited in claim 81. Similarly to Beckhardt, Bodnar
20 describes synchronizing datasets of records where each record may include one or
21 more data fields (col.7, lines 13-25). As in Beckhardt, Bodnar describes
22 synchronization for only a two level dataset (i.e., record: field), rather than the at
23 least three-levels (i.e., object: attribute: linked value) described in claim 81.
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1 Accordingly, claim 81, as well as dependent claims 82-86, are allowable
2 over Bodnar and Applicant respectfully requests that the §102 rejection be
3 withdrawn.

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5 **35 U.S.C. §103 Claim Rejections**

6 Claims 15-17, 25-26, 37-38, 41, and 68-71 are rejected under 35 U.S.C.
7 §103(a) for obviousness over Beckhardt in view of Bodnar (*Office Action* p.25,
8 ¶5). Applicant respectfully traverses the rejection.

9 As described above in the response to the §102 rejections of independent
10 claims 1, 18, 27, 39, and 55, these claims are allowable over both Beckhardt
11 and/or Bodnar. Accordingly, claims 15-17 are allowable by virtue of their
12 dependency upon claim 1; claims 25-26 are allowable by virtue of their
13 dependency upon claim 18; claims 37-38 are allowable by virtue of their
14 dependency upon claim 27; claim 41 is allowable by virtue of its dependency upon
15 claim 39; and claims 68-71 are allowable by virtue of their dependency upon
16 claim 55.
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Conclusion

Pending claims 1-86 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. If any issues remain that preclude issuance of this application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

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